

December 19, 2018

U.S. Environmental Protection Agency Region 1: New England Office of Ecosystem Protection Water Technical Unit (OES04 – SMR) 5 Post Office Square - Suite 100 Boston, MA 02109-3912

Dear Sir/Madam:

#### Merrimack Station NPDES Permit No. NH0001465 2017 Annual Fish Impingement Report

Granite Shore Power LLC (GSP) herein submits this Annual Fish Impingement Report for the year 2017 pursuant to Part I., Section A.10.b. of the Merrimack Station NPDES Permit, No. NH0001465. This permit condition requires GSP to conduct impingement monitoring at Merrimack Station according to the provisions below.

- GSP shall provide impingement monitoring at Merrimack Station when flows from Garvins Falls Hydroelectric Station are less than 900 cubic feet per second (cfs) during any period from July 1 through October 15.
- GSP shall collect all fish from both MK-1 and MK-2 traveling screen washes during one continuous 48-hour period per week when the conditions outlined above are met.
- GSP shall report in writing to the New Hampshire Fish & Game Department (NHFGD), United States Fish and Wildlife Service (USFWS), New Hampshire Department of Environmental Services (NHDES) and the United States Environmental Protection Agency (USEPA) any Extraordinary Impingement Event (EIE) at Merrimack Station. An EIE is defined as an event when 50 or more fish at any one time, of any size or species, are either distressed or killed as a result of impingement.

Based on river flows at Garvins Falls Hydro and unit operation, Merrimack Station was required to collect three weekly samples from the intake screens between July 1 and October 15 in 2017. A total of six fish were collected during normal impingement monitoring over the entire sampling season. Impingement rates for the sampling periods were calculated by dividing the total number of fish collected by the total volume of water passed through the units. The volume of water reported is based on circulating pump capacities and the number of pumps that were operating during each screen wash cycle. Each operating unit has two pumps; the pumps servicing Unit 1 are rated at 63 cfs each (126 cfs total), the pumps servicing Unit 2 are rated at 144.5 cfs each (289 cfs total).

Table 1 summarizes the total number of fish collected and the impingement rate for each sampling period. The average impingement rate for 2017 was 0.18 fish per million cubic feet of screened water. As demonstrated each year, the rate of fish impingement at Merrimack Station is extremely low by all industry standards even though the data is collected during worse case conditions, i.e., when river flows are less than 900 cfs. Table 2 identifies the six impinged fish by common name as well as the respective total lengths. Table 3 provides corresponding scientific names of the fish species commonly found in this section of the Merrimack River. All of the weekly data sheets are attached to demonstrate river flows above 900 cfs and the operational status of the two units. There were no extraordinary impingement events in 2017.

If you have any questions regarding this report, please call Allan Palmer at (603) 230-7951.

Sincerely,

**GRANITE SHORE POWER** 

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Elizabeth H. Tillotson

Executive Director of Administration & Regulatory Affairs

Enclosures

cc: Ms. Sharon M. DeMeo

US Environmental Protection Agency

Region 1: New England

Office of Ecosystem Protection

Mail Code: OEP

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Mr. Eric Nelson

US Environmental Protection Agency

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NH Department of Environmental Services

Water Division

Wastewater Engineering Bureau

Permits and Compliance Section

29 Hazen Drive, P.O. Box 95

Concord, NH 03302-0095

Mr. Joseph F. McKeon

US Fish and Wildlife Service

Central New England Fishery Resources Office

151 Broad Street

Nashua, NH 03063

Mr. John Magee, Fish Habitat Biologist

New Hampshire Fish and Game Department

Inland Fisheries Division

11 Hazen Drive

Concord, NH 03301

Ms. Carol Henderson, Environmental Review Coordinator

New Hampshire Fish and Game Department

11 Hazen Drive

Concord, NH 03301

TABLE 1

Merrimack Station

Fish Impingement Monitoring Program
2017 Schedule and Impingement Rates

48 Hour Sample Dates	Unit(s) Sampled	48 Hour Flow Through the Units	Impingement Rate	Fish Count
08/02 - 08/04	1	10,886,400 cu. ft.	0.28/million cu. ft.	3
08/15 - 08/17	1	10,886,400 cu. ft.	0.09/million cu. ft.	1
08/29 - 08/31	1	10,886,400 cu. ft.	0.18/million cu. ft.	2

The average impingement rate for the two sampling periods was 0.18 fish per million cubic feet of screened water.

## TABLE 2 Merrimack Station Fish Species Collected During Impingement Monitoring July 1, 2017 through October 15, 2017

Sampling Period	Fish Species Collected	Total Length (cm)
08/02 - 08/04	Yellow Perch	15
	Yellow Perch	10
	Yellow Perch	27
08/15 - 08/17	Smallmouth Bass	17
08/29 - 08/31	Yellow Perch	19
	Yellow Perch	15

#### TABLE 3

## Merrimack Station Scientific Names of Species Common in the Merrimack River

Smallmouth Bass

Largemouth Bass

Bluegill Sunfish

Pumpkinseed Sunfish

Redbreast Sunfish

Micropterus salmoides

Lepomis macrochirus

Lepomis gibbosus

Lepomis auritus

Brown Bullhead Ictalurus nebulosus

White Sucker Catastamus commersoni

Yellow Perch

Common Shiner

Spottail Shiner

Alewife

Perca flavescens

Notropis cornutus

Notropis hudsonius

Alosa pseudoharengus

Alewife Alosa pseudohar
Chain Pickerel Esox niger

Northern Pike Esox Lucius

Creek Chub Semotilus atromacultas

Common Carp Cyprinus carpio

American Eel Anguilla rostrata



# MERRIMACK STATION FISH IMPINGEMENT MONITORING REPORT

JULY 1 TO OGROBER 15

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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#### **FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET**

MERRIMACK STATION

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MERRIMACK STATION

Week Ending 7/22/17

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### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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#### **FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET**

MERRIMACK STATION

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 8/19/17

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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MERRIMACK STATION

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CIRC PUMP STATUS
MK-1
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### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

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## FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 10/7/17

SAMP	LING PERIOD
Begin	
End	

UNIT	STATUS
MK-1	OFF
MK-2	OFF

MK-1 OFF
MK-2 OFF

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Alewife																	
American Shad																	
Small mouth Bass																	
Largemouth Bass																	
Bluegill Sunfish																	
Pumpkinseed Sunfish																	_
Redbrested Sunfish																	_
Brown Bullhead																	
White Sucker																	
Yellow Perch																	
Common Shiner																	
Spottail Shiner																	_
American eel														ALCOHOLD !	Times lives	No. of Control of Control	-
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#### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 6/14/17

SAMPLING PERIOD
Begin
End

MK-1 OFF
MK-2 OFF

MK-1 OFF

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Alewife	BEALSE.	BEAT SY	2004	E. Do		1202	1	Arthur Alex	era welt.	K-14	Entlish Ne		Art la de la	Market	K-LX	E L	HAR			
American Shad		-	<u> </u>													-		-		╀
Small mouth Bass							1000							-				-	-	╀
Largemouth Bass			$\vdash$									$\vdash$							-	$\vdash$
Bluegill Sunfish								_							-			-		-
Pumpkinseed Sunfish								-				$\vdash$		_	_				-	
Redbrested Sunfish										-	-						-	-		-
Brown Bullhead																		-	-	$\vdash$
White Sucker								W 300										-	-	╁
Yellow Perch																			-	$\vdash$
Common Shiner																				
Spottail Shiner																				$\vdash$
American eel																		1	1	$\vdash$
Unidentified Species															300					
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										8										$\vdash$
Additional Fish	-	THE RES	7												6					
N. California (N. Cal																				THE REAL PROPERTY.
			- Liverite																	



### FISH IMPINGEMENT MONITORING WEEKLY DATA SHEET

MERRIMACK STATION

Week Ending 10 21 17

SAI	MPLING PERIOD
Begin	
End	

MK-1 OFF MK-2 OFF CIRC PUMP STATUS
MK-1 OFF
MK-2 OFF

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Alewife									National Property of the Parket									
American Shad																		
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